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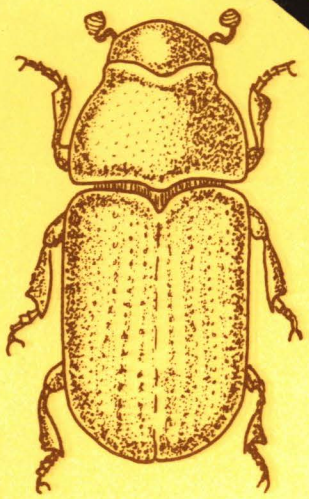
BIOLOGICAL EVALUATION
Western Tent Caterpillar

Santa Fe National Forest
New Mexico

1978



Southwestern Region

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

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Santa Fe National Forest
New Mexico

December 1978

Forest Insect and Disease Management
State and Private Forestry
Southwestern Region, USDA Forest Service
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INTRODUCTION

A western tent caterpillar, Malacosoma californicum (Packard), egg mass survey was conducted on the Santa Fe National Forest, September 25-29 and October 3-5, 1978, by Ralph Thier, entomologist, Santa Fe National Forest, and Iral Ragenovich, entomologist, Forest Insect and Disease Management. On some Districts of the Santa Fe National Forest, defoliation by the western tent caterpillar, and the caterpillar itself, has caused public concern. This survey was conducted to determine general outbreak trends of the insect on the Espanola, Tesuque, Jemez, and Coyote Ranger Districts, and to verify the presence of western tent caterpillar on the Pecos Ranger District.

TECHNICAL INFORMATION

Insect.--Western tent caterpillar, Malacosoma californicum (Packard).

Host.--Quaking aspen, Populus tremuloides Michx.

Type of Damage.--Damage occurs as light to heavy defoliation in aspen stands. Defoliation occurs in the spring and trees refoliate. Several consecutive years of heavy defoliation may cause branch dieback in some trees, or tree mortality in weakened trees. Destruction of aspen clones is rare. The defoliated trees and the presence of large numbers of caterpillars in the spring cause public concern in high use and highly visible areas.

Life History.--The tent caterpillar has a 1-year life cycle. Eggs are laid in a mass on twigs from mid-July until August. Insect development is completed in 3 to 4 weeks; first-instar larvae spend the winter in the egg and emerge the following spring, usually around the end of May. After they emerge, the larvae feed gregariously and begin constructing a silken tent in a nearby branch crotch. Larvae mature in 4 to 6 weeks and begin to wander at random, seeking a pupation site. Moths emerge from the pupae in 12-18 days.

Infestations normally last for 3 or 4 years and then collapse.

History of the Infestation.--The current infestation was first detected on the Coyote, Jemez, Tesuque, and Espanola Ranger Districts in 1976. Defoliation was reported as light to medium in most areas. In 1977, the infestation increased in size and defoliation was predominately medium to heavy. In 1978, defoliation was medium to heavy in all previously infested areas. Light defoliation was detected on the Pecos Ranger District for the first time in the spring of 1978.

METHODS

An aerial detection survey was conducted on the Santa Fe National Forest in July 1978. Areas of defoliated aspen were delineated on a map and recorded as light, medium, or heavy defoliation. Since some aspen stands had refoliated, it was not possible to detect all infestation centers.

In September and October, an egg mass survey was conducted on the Espanola, Tesuque, Jemez, Pecos, and Coyote Ranger Districts. Accessible areas of defoliation were identified on each District. Areas sampled were: 1) Vega Cochina and Jarocito, Coyote Ranger District; 2) Paliza Canyon and Cerro Pelado, Jemez Ranger District; 3) Upper Cow Creek, Pecos Ranger District; 4) Rabbit Mountain and Peralta Canyon, Tesuque Ranger District; and 5) Clara Peak Road, Camp May, and Bandelier, Espanola Ranger District.

Five to 10 permanent plots were established in each area, with approximately 0.1 to 0.5 miles between plots. Each plot was marked with an orange surveyor's stake, and consisted of five sample trees marked with aluminum tags. Two branch samples, 30 inches long, were cut from opposite sides of the crown of each sample tree, and the numbers of old and new egg masses counted and recorded. Sample trees will be checked for defoliation in 1979 to determine if trend predictions were accurate.

RESULTS AND DISCUSSION

A summary of the results of the egg mass survey is given in Table 1. Results show that in all but two areas sampled, the population trend was increasing. The ratio of new to old egg masses is an indication of population trend. A ratio of more than one indicates an increasing trend; less than one, a decreasing trend; and equal ratios, a static trend.

Defoliation prediction values are based on the mean number of new egg masses per two 30-inch branch samples. Prediction values are:

Mean number of new egg masses per two-branch samples	Predicted defoliation
0-1.2	light
1.2-2.5	medium
2.5+	heavy

According to the egg mass survey, heavy defoliation can be expected to generally occur on the Coyote, Jemez, Tesuque, and Espanola Ranger Districts in 1979. No egg masses were found in the Upper Cow Creek of the Pecos Ranger District.

Table 1.--Results of western tent caterpillar egg mass survey, Santa Fe National Forest, 1978.

Ranger District	Mean no. of new egg masses/two branch sample	Ratio of new to old egg masses	Trend of infestation	Prediction of defoliation in 1979
Coyote RD				
Vega Cochina	0.5	1.9	Increasing	Light
Jarocito	3.5	0.99	Static	Heavy
Jemez RD				
Paliza Canyon	1.6	4.4	Increasing	Medium
Cerro Pelado	3.1	1.2	Increasing	Heavy
Tesuque RD				
Rabbit Mtn.	6.2	2.4	Increasing	Heavy
Peralta Canyon	6.2	1.5	Increasing	Heavy
Espanola RD				
Clara Peak Rd.	6.4	1.8	Increasing	Heavy
Camp May	7.0	5.4	Increasing	Heavy
Bandelier	4.0	1.4	Increasing	Heavy

Western tent caterpillar populations usually build up and collapse within 3 to 4 years. Several years of continuous defoliation may result in some branch dieback, or occasional tree mortality in already weakened trees; however, damage is usually minor. Infestations occurring around highly visible, and recreation, areas may cause public concern for several weeks while the caterpillars are feeding and moving about. However, after the caterpillars pupate in June, the trees refoliate, and though the crowns are somewhat thinner, there is little aesthetic damage.

RECOMMENDATIONS

1. No suppression measures are recommended for the western tent caterpillar infestation because tree damages will be minor.

2. We suggest that a public information program be conducted to alleviate public concerns. We can assist you in this regard.